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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,021	04/16/2004	Harry Tiotantra	STL11607	9067

7590 02/20/2007

Seagate Technology LLC
1280 Disc Drive
Shakopee, MN 55379

EXAMINER	
WANG, ALBERT C	
ART UNIT	PAPER NUMBER
2115	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/826,021	TIOTANTRA ET AL.	
	Examiner	Art Unit	
	Albert Wang	2115	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 April 2004* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is responsive to the amendment filed 11 December 2006.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hodge et al., U.S. Pub. No. 2004/0252397 ("Hodge"), in view of Millikan et al., U.S. Patent No. 6,928,039 ("Millikan").

As per claim 1, Hodge teaches a data streaming system, comprising:

a data storage device providing an intermittent read data stream (figs 1A&B and 5, disk drive 104 or 504; par. 0032); the data storage device also including an environment sensor and altering the frequency of cache refresh operations as a function of a sensor output (figs 1A&B and 5, accelerometer 110 or 524; pars. 0053-0054);

a data streaming buffer circuit receiving the intermittent read data stream, providing a buffer data stream (figs 1A&B and 5, cache 106 or 506; par. 0052); and

means to control energization of the data storage device (par. 0049).

Hodge teaches that acceleration interferes with the read, or fill, time from the data storage device (pars. 0031 & 0046), and that that buffer refresh operations must occur frequently enough so that read delays due to acceleration do not cause buffer underflow (pars. 0053-0054), indicating that the time to fill the data streaming buffer is variable. However, Hodge does not expressly teach the details of deciding when a buffer refresh, and the corresponding energization of the data storage device, should occur. Millikan teaches comparing time-to-fill and time-to-

exhaust estimates to control energization of a data storage device (col. 3, line 59 – col. 4, line 24; col. 4, line 55 – col. 5, line 13). At the time of the invention, it would have been to one of ordinary skill in the art to apply Millikan's comparing to Hodge's data streaming system, as time-to-fill and time-to-exhaust values are inherently related when buffer underflow will occur.

As per claim 2, Millikan teaches the control of the energization prevents exhausting of data stored in the data streaming buffer circuit (col. 4, lines 25-54).

As per claim 3, Millikan teaches the intermittent data stream has a first data transmission rate, and the buffer data stream has a second data transmission rate that is slower than the first data transmission rate (col. 1, lines 43-56).

As per claim 4, Millikan teaches the intermittent data stream refills the data streaming buffer circuit before the data streaming buffer circuit is depleted of data, so that the buffer data stream is a continuous data stream (col. 4, lines 25-54).

As per claim 5, Millikan teaches the energization cycles on and off to reduce energy consumption in the data streaming system (col. 3, lines 28-45).

As per claim 6, Millikan teaches the buffer data stream has a bit rate that is controllable by a command received from an output device (col. 3, lines 1-17).

As per claim 7, Millikan teaches the data storage device further comprises a data streaming rate estimate output that is coupled to an output device (col. 3, lines 1-17).

As per claim 8, Hodge teaches the environmental sensor comprises an acceleration sensor (figs 1A&B and 5, accelerometer 110 or 524).

As per claims 9-12, it would have been obvious to use any type of sensor that measures a property that affects the time-to-fill value.

As per claim 13, Hodge teaches the data storage device comprises a hard disc drive (par. 0004).

As per claim 14, Hodge teaches the data storage device is mounted in a portable device subject to environmental shock (par. 0032).

As per claim 15, Hodge teaches a method of data streaming, comprising:

coupling an intermittent data stream from a data storage device to a data streaming buffer circuit that provides a buffer data stream (figs. 1A&B and 5, coupling disk drive 104 or 504 to cache 106 or 506);

altering the frequency of cache refresh operations as a function of an environment sensor output (figs 1A&B and 5, accelerometer 110 or 524; pars. 0053-0054); and

controlling energization of the data storage device (par. 0049).

Hodge teaches that acceleration interferes with the read, or fill, time from the data storage device (pars. 0031 & 0046), and that that buffer refresh operations must occur frequently enough so that read delays due to acceleration do not cause buffer underflow (pars. 0053-0054), indicating that the time to fill the data streaming buffer is variable. However, Hodge does not expressly teach the details of deciding when a buffer refresh, and the corresponding energization of the data storage device, should occur. Millikan teaches comparing time-to-fill and time-to-exhaust estimates to control energization of a data storage device (col. 3, line 59 – col. 4, line 24; col. 4, line 55 – col. 5, line 13). At the time of the invention, it would have been to one of ordinary skill in the art to apply Millikan's comparing to Hodge's method of data streaming, as time-to-fill and time-to-exhaust values are inherently related when buffer underflow will occur.

As per claim 16, Millikan teaches preventing exhaustion of the buffer circuit by the controlling of energization (col. 4, lines 25-54).

As per claim 17, Millikan teaches transmitting data from the data storage device at a faster rate than transmission of data from the buffer circuit (col. 1, lines 43-56).

As per claim 18, Millikan teaches refilling the buffer circuit with data from the intermittent data stream before the buffer circuit is depleted of data (col. 4, lines 25-54).

As per claim 19, Millikan teaches reducing energy consumption in the data storage device by cycling the energization on and off (col. 3, lines 28-45).

As per claim 20, Millikan teaches controlling a bit rate of the buffer data stream by an output device (col. 3, lines 1-17).

As per claim 21, Hodge teaches the environmental sensor sensing an environmental variable selected from the group: acceleration, loss-of-read-channel-signal, humidity, temperature, low battery (par. 0023).

As per claim 22, Millikan teaches coupling a data streaming rate estimate output from the data storage device to an output device (col. 3, lines 1-17).

As per claim 14, Hodge teaches the data storage device is mounted in a portable device subject to environmental shock (par. 0032).

As per claim 24, Hodge teaches a data streaming system, comprising:

a data storage device providing an intermittent read data stream (figs 1A&B and 5, disk drive 104 or 504; par. 0032); the data storage device also including an environment sensor and

altering the frequency of cache refresh operations as a function of a sensor output (figs 1A&B and 5, accelerometer 110 or 524; pars. 0053-0054);

a data streaming buffer circuit receiving the intermittent read data stream, providing a buffer data stream (figs 1A&B and 5, cache 106 or 506; par. 0052); and

means to control energization of the data storage device (par. 0049).

Hodge teaches that acceleration interferes with the read, or fill, time from the data storage device (pars. 0031 & 0046), and that that buffer refresh operations must occur frequently enough so that read delays due to acceleration do not cause buffer underflow (pars. 0053-0054), indicating that the time to fill the data streaming buffer is variable. However, Hodge does not expressly teach the details of deciding when a buffer refresh, and the corresponding energization of the data storage device, should occur. Millikan teaches comparing time-to-fill and time-to-exhaust estimates to control energization of a data storage device (col. 3, line 59 – col. 4, line 24; col. 4, line 55 – col. 5, line 13). At the time of the invention, it would have been to one of ordinary skill in the art to apply Millikan's comparing to Hodge's data streaming system, as time-to-fill and time-to-exhaust values are inherently related when buffer underflow will occur.

As per claim 25, Millikan teaches the control of the energization prevents exhausting of data stored in the data streaming buffer circuit (col. 4, lines 25-54).

As per claim 26, Millikan teaches the controlling of energization reduces energy consumption on the data streaming system (col. 3, lines 28-45).

As per claim 27, Hodge teaches the environmental sensor senses acceleration (figs 1A&B and 5, accelerometer 110 or 524).

Conclusion

Examiner's note:

Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert Wang whose telephone number is 571-272-3669. The examiner can normally be reached on M-F (9:30 - 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas C. Lee can be reached on 571-272-3667. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AW

CHUN CAO
PRIMARY EXAMINER